

## **CLAIMS**

1. Internet Protocol mobility supporting method for supporting the roaming of a Mobile Node (MN) in a Mobile Internet Protocol Network from a home network (HN) towards a Visited Network (VN), said home network (HN) comprising a home agent (HA), **CHARACTERIZED IN THAT** said Mobile Internet Protocol Network excluding said visited network (VN) comprises a Foreign Agent (FA) and that said method comprises the following steps:
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- 10           a. forwarding a destination address towards said Home Agent (HA) by said Mobile Node (MN) at roaming of said Mobile Node (MN) from said home network (HN) to said visited network (VN1);
- b. assigning said Foreign Agent (FA) to said Mobile Node (MN) by a Foreign Agent assigning entity (FAAE) at request of said Mobile node (MN);
- 15           c. Establishing a path between said Home Agent (HA) and said Foreign Agent by said Home Agent (HA); and
- d. Establishing a path between said Foreign Agent (FA) and said Mobile Node (MN) by said Foreign Agent (FA) based on said destination address.
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2. Internet Protocol mobility supporting system for supporting the roaming of a Mobile Node (MN) in a mobile Internet protocol Network from a home network (HN) towards a Visited Network (VN), said home network (HN) comprising a Home Agent (HA), **CHARACTERIZED IN THAT** said Mobile Internet Protocol Network excluding said Visited Network (VN) comprises a Foreign Agent (FA) and that said system, comprises the following parts:
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- a) destination address forwarding part (DAFP) , located in said
- 30 Mobile Node (MN) and adapted to forward, at roaming of said Mobile

Node (MN) from said home network (HN) to said visited network (VN), a destination address towards said home agent (HA);

5       b) Foreign Agent Assigning Entity (FAAE), adapted to assign said Foreign Agent (FA) to said Mobile Node (MN) at request of said Mobile Node (MN);

      c) Home Agent path establishing part (HAPEP), located in said Home Agent (HA) and adapted to establish a path between said home agent (HA) and said Foreign Agent (FA); and

10       d) Foreign Agent path establishing part (FAPEP), located in said Foreign Agent (FA) and adapted to establish a path between said Foreign Agent and said Mobile Node (MN) by said Foreign Agent (FA) based on said destination address.

      3. Internet Protocol mobility supporting system according to  
15   claim 2, **CHARACTERIZED IN THAT** said destination address is an Internet Protocol address of said Mobile Node (MN), said address being a temporary address, assigned by a Dynamic Host Control Protocol server of said visited network (VN) and said destination address identifying said path between said Foreign agent and said Mobile Node.

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      4. Internet Protocol mobility supporting system according to  
claim 2, **CHARACTERIZED IN THAT** said destination address is the Internet Protocol address of an Access Router (AR) at the edge of said visited network, said access router (AR) being adapted to establish a path between said access  
25   router (AR) and said Mobile Node (MN) based on forwarding information provided to said Access Router by said Mobile Node and said destination address identifying said path between said Foreign agent and said Access Router.

5. Mobile Node (MN) for use in a Internet Protocol mobility supporting system for supporting the roaming of said Mobile Node (MN) in a Mobile Internet Protocol Network from a Home Network (HN) towards a Visited Network (VN), said Home Network (HN) comprising a Home Agent (HA), said Mobile Node (MN) being connected to said mobile Home Network (HN), **CHARACTERIZED IN THAT** said Mobile Node (MN) comprises a Foreign Agent Assignment requesting part (FAARP), adapted to request, at detection of entry of said Mobile Node in said Visited Network (VN), a Foreign Agent assigning entity (FAAE) of said Home network (HN) to assign a Foreign Agent (FA) to said Mobile Node (MN).

6. Foreign Agent assigning entity (FAAE) for use in a Internet Protocol mobility supporting system for supporting the roaming of a Mobile Node (MN) in a Mobile Internet Protocol Network from a home network (HN) towards a Visited Network (VN), said Home Network (HN) comprising a Home Agent (HA), said Mobile Node (MN) being connected to said mobile Home Network (HN), said Foreign Agent assigning entity (FAAE) comprising the following parts:

a. a Foreign Agent Assignment request reception part (FAARRP), adapted to receive a request for service of a Foreign Agent (FA) of said Mobile Node (MN);

b. a Foreign Agent Assigning part (FAAP), coupled with an input to an output of said Foreign Agent Assignment request reception part (FAARRP) and adapted to assign a Foreign Agent to said Mobile Node (MN) at reception of said request for service of a foreign agent (FA) of said Mobile Node (MN); and

c. a notification part (NP), coupled with an input to an output of said Foreign Agent Assigning Part (FAAP), and adapted to notify said Foreign Agent

(FA) of an assignment of said Foreign Agent (FA) for providing Foreign Agent service to said Mobile Node (MN).

7. Foreign Agent assigning entity (FAAE) according to claim 6,  
5 **CHARACTERIZED IN THAT** said Foreign Agent assigning entity (FAAE)  
further comprises a Foreign Agent holding part (FAHP) adapted to hold a list  
comprising at least one Foreign Agent (FA); and

that said Foreign Agent Assigning part (FAAP) is coupled to said  
Foreign Agent Holding Part (FAHP) and is further adapted to select said  
10 Foreign Agent (FA) to be assigned from said Foreign Agent Holding Part  
(FAHP).

8. Foreign Agent assigning entity (FAAE) according to claim 6,  
**CHARACTERIZED IN THAT** said Foreign Agent assigning entity (FAAE) is  
15 further adapted to assign a Foreign Agent (FA) provided via an Authorisation  
Authentication Accounting-Server (AAAS).

9. Home agent (HA) for use in a Internet Protocol mobility  
20 supporting system for supporting the roaming of said Mobile Node (MN) in  
a Mobile Internet Protocol Network from a Home Network (HN) towards a  
Visited Network (VN), said Home Network (HN) comprising said Home  
Agent (HA), said Mobile Node (MN) being connected to said mobile Home  
Network (HN), **CHARACTERIZED IN THAT** said Home Agent (HA)  
25 comprises a Foreign Agent Assigning Entity (FAAE) according any of the  
claims 6 to 8 and that said Home Agent (HA) further comprises a Home Agent  
Path Establishing Part (HAPEP), coupled with an output to an input of said  
Foreign Agent Assigning Entity (FAAE) and adapted to establish a connection  
between said home agent (HA) and said assigned Foreign Agent (FA).

10. Authentication, Authorization and Accounting Server (AAS) for use in a Internet Protocol mobility supporting system for supporting the roaming of a Mobile Node (MN) in a Mobile Internet Protocol Network from a Home Network (HN) towards a Visited Network (VN), said Home  
5 Network (HN) comprising a Home Agent (HA), said Mobile Node (MN) being connected to said Home Network (HN), **CHARACTERIZED IN THAT** said Home Agent (HA) comprises a Foreign Agent assigning entity (FAAE) according to any of the claims 6 to 8.

10 11. Foreign Agent (FA) for use in a Internet Protocol mobility supporting system for supporting the roaming of a Mobile Node (MN) in a Mobile Internet Protocol Network from a Home Network (HN) towards a Visited Network (VN), said Home Network (HN) comprising a Home Agent (HA) and said Mobile Node (MN) being connected to said Home Network (HN),  
15 **CHARACTERIZED IN THAT** said Foreign Agent (FA) is included in said mobile Internet protocol Network excluding said visited network (VN), and that said Foreign Agent comprises:

- a. a Foreign Agent Reception Part (FARP), adapted to receive data from said Home Agent (HA); and
- 20 b. a Control Part (CP), coupled with an input to an output of said Foreign Agent Reception Part (FARP) and adapted to determine a destination address from said data sent by said home agent (HA);
- c. a Foreign Agent Path Establishing Part (FAPEP), coupled with an input to an output of said Control Part (CP), and adapted to  
25 establish a path between said Foreign Agent (FA) and said Mobile Node (MN) based on said destination address.

12. Foreign Agent (FA) according to claim 11, **CHARACTERIZED IN THAT** said Foreign Agent Path Establishing Part (FAPEP) is adapted to  
30 establish a connection between said Foreign Agent (FA) and said Mobile

Node (MN) where said destination address is a Internet protocol address assigned to said Mobile Node (MN).

13. Foreign Agent (FA) according to claim 11, **CHARACTERIZED**  
5 **IN THAT** said Foreign Agent connection establishing part (FACEP), is adapted to establish a connection between said Foreign Agent (FA) and an Access Router (AR) at the edge of said Visited Network (VN) where said destination address is a Internet Protocol address assigned to said Access Router (AR).

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14. Access Router for use in a Internet Protocol mobility supporting system for supporting the roaming of a Mobile Node (MN) in a Mobile Internet Protocol Network from a Home Network (HN) towards a Visited Network (VN), said Home Network (HN) comprising a Home Agent  
15 (HA), said Access Router (AR) being located at the edge of said visited network, **CHARACTERIZED IN THAT**, said access router (AR) comprises an Access Router Path Establishing Part (ARPEP) adapted to establish a path between said Access Router (AR) and said Mobile Node (MN) based on forwarding information provided to said Access Router by said Mobile Node.